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outside portions. The rigid hinge may instead be arranged only at the sides of the hinge line; not necessarily protruding from the elastic hinge. The hybrid hinges further comprise respective elastic hinges having respective portions 3a, 3b, 3c and 5a, 5b, 5c. Preferably, a central portion 3b, 5b of the elastic hinges is arranged to coincide with the shafts 2a, 4a. More preferably, the elastic hinges are arranged to seal an interface between the segments S1, S2 and S2, S1' in the area of the rigid hinge. This feature enables an effective protection from dust and particle contamination from environment. This is particularly advantageous when a fragile material, like a flexible display is conceived to be supported by the segments S1, S2 and S1'. An embodiment of the electronic device comprising a flexible display will be discussed with the reference to FIG. 4.

FIG. 2 presents a schematic view of the embodiment of FIG. 1 in a closed state. A suitable device, notably an electronic device comprises segments 21, 22, 23 interconnected by respective hybrid joints 29, 29a according to the invention. The hybrid joint 29 comprises a rigid hinge 25, 24 and an elastic hinge with portions 27a, 27b, respectively 26a, 26b. It is noted that the elastic hinge is arranged to alternate between a substantially flat position, as is schematically indicated in FIG. 1, and a bent position as is schematically shown in FIG. 2. By selecting a bendable plastic material, like polypropylene, polyethylene or any elastomer, such alternations may be enabled without causing any damage to the elastic hinge. Preferably, to minimize stress to the material of the elastic hinge, the rigid hinge is positioned in line with the elastic hinge so that their respective axis of rotation coincide.

FIG. 3 presents a schematic view of an embodiment of a part of the electronic device according to the invention. The electronic device 30 comprises a housing 31 arranged for supporting a layer of a material 34, notably a flexible display. The electronic device 30, for example a portable telephone, comprises a plurality of hybrid hinges 35a, 35b, 35c, 35d arranged at each interface between two segments such as, like segments 31, 32, conceived to be rotatably displaced with respect to each other. Due to provision of the hybrid hinge according to the invention the opening and closing of the cover of the electronic device 30 is enabled in a smooth way protecting the layer 34 from a mechanical shock due to abrupt opening or closing of the cover. In case when the elastic hinge (not shown) is arranged to expand in the area of the interface between the segments thereby covering or sealing the interface, the layer 34 is effectively protected from undesirable influence of the environment, like contamination particles. It is noted that even a substantial protection against humidity may be envisaged due to such sealing.

FIG. 4 presents a schematic view of a further embodiment of the electronic device according to the invention. In this particular embodiment an electronic apparatus 40 comprising a flexible display 45 is shown, said apparatus 40 being arranged to be book-shaped. The electronic apparatus 40 comprises a cover 47 which is arranged to provide a suitable support to the flexible display 45 and to protect the display area from damage. The respective segments 41, 42 of the book-shaped electronic device are interconnected by the hybrid hinge 44 according to the invention, said hinge enabling a rotation of the segments 41, 42 about the axis 43. In order to prevent damage of the flexible display due to folding, the cover 47 comprises cavities 46a, 46b arranged for receiving a portion of the flexible display 45 when the electronic device 40 is closed. In case when the elastic hinge (not shown) is arranged to expand in the area of the interface between the segments 41, 42 thereby sealing the interface, the flexible display 45 is effectively protected from undesirable

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influence of the environment, like contamination particles. It is noted that even a substantial protection against humidity may be envisaged due to such sealing. Also, the fact that the elastic hinge is present sealing the space between the segments 41, 42, extra mechanical strength to the hybrid hinge is provided. This is of particular importance when the hybrid hinge is to cooperate with a fragile structure posing specific requirements onto suitable support means. Thus, when the rigid hinge is being positioned so that the segments 41, 42 do not form a flat structure, the openings in the rigid hinge are protected by the elastic hinge preventing the underlying fragile structure, notably a flexible display, from mechanical damage.

It is noted that it is desirable that the length of the display stays substantially the same during opening and closing of the electronic device 40. To achieve this the hinge is to be positioned as close as possible to the plane of the display 45, preferably in the plane of the display 45. The rigid hinge due to its dimension can only be positioned near the plane of the flexible display 45. This means that the axis of the hinge is weak. This disadvantage is solved by providing the elastic hinge wherein the rigid hinge is cooperating with the elastic hinge. Although it is shown in FIG. 4 that the axis of the elastic hinge coincides with the axis of the rigid hinge, this may not be explained limitative, as it is also possible to arrange the elastic hinge being spaced apart from the rigid hinge.

Preferably, in case when the display is arranged to be pivoted at least in a first region and in a second region, the elastic hinge is arranged to extend between the said at least the first region and the second region. Due to this feature an additional protection of the back surface of the display is achieved. This is implemented when at least one of the pivotable areas comprises a hybrid hinge comprising a rigid hinge and an elastic hinge, the elastic hinge extending to the second hinge in the second region. More preferable, the first region and the second region comprise the elastic hinge.

It will be appreciated that although specific embodiments of the electronic device according to the invention are discussed separately for clarity purposes, interchangeability of compatible features discussed with reference to isolated figures is envisaged. While specific embodiments have been described above, it will be appreciated that the invention may be practiced otherwise than as described. The descriptions above are intended to be illustrative, not limiting. Thus, it will be apparent to one skilled in the art that modifications may be made to the invention as described in the foregoing without departing from the scope of the claims set out below.

The invention claimed is:

1. An electronic device, comprising:

a display having a first segment and a second segment;
a rigid hinge comprising a shaft; and
an elastic hinge disposed between the display and the rigid hinge, wherein the elastic hinge cooperates with the rigid hinge and extends at least partially over an area of the first segment and the second segment, wherein the first segment and the second segment are rotatable about the shaft.

2. The electronic device according to claim 1, wherein the elastic hinge is arranged for substantially sealing an area between the first segment and the second segment.

3. The electronic device according to claim 2, wherein the elastic hinge comprises a stretchable material.

4. The electronic device according to claim 1, wherein the elastic hinge comprises a bendable polymer.

5. The electronic device according to claim 1, wherein the rigid hinge is arranged inside the elastic hinge.